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MONTANA DEPARTMENT OF FISH, WILDLIFE & PARKS
ECOLOGICAL SERVICES DIVISION

JOB PROGRESS REPORT

State Montana
Title Lower Missouri River Basin Investigation
Project No. FW-2-R-12
(Poplar River segment)
Job No. 1-b
Title Planning Inventory, Fisheries
Period Covered July 1, 1982 through June 30, 1983

ABSTRACT

Walleye numbers in the East and Middle Forks of the Poplar River in 1982 remained very low in comparison to 1977 to 1979. Numbers at downstream locations are only slightly larger. Large numbers of northern pike YOY were again produced in most parts of the Poplar River, but older age groups have decreased in number from 1981.

BACKGROUND

A description of the Poplar River, problems related to development in the drainage and aquatic work undertaken have been described in a previous report (Stewart 1978). Additional information is given in later reports (Stewart 1979, 1980, 1981 and 1982).

The purpose of Poplar River work in 1982 was continuation of walleye and northern pike population estimates and survey electrofishing to monitor the status of these two species under altered streamflow regimes in the East Fork Poplar River. Poplar River work since 1979 has been largely confined to the East and Middle Forks (Figure 1). The Canadian dam (Cookson Reservoir) and electrical generating plants are located on the East Fork. The Middle Fork serves as a control, being unaffected by dams or power development.

OBJECTIVES

Specific 1982 objectives were the following:

A. Determine reproductive success of walleye and northern pike by measuring the population size of young-of-the-year (YOY) in September or October.

B. Measure population size of walleye and northern pike age 1+ and older.

C. Obtain and organize USGS streamflow data related to Poplar River fish populations.

PROCEDURES

Methods and procedures used in 1982 are described in a previous report (Stewart 1978).

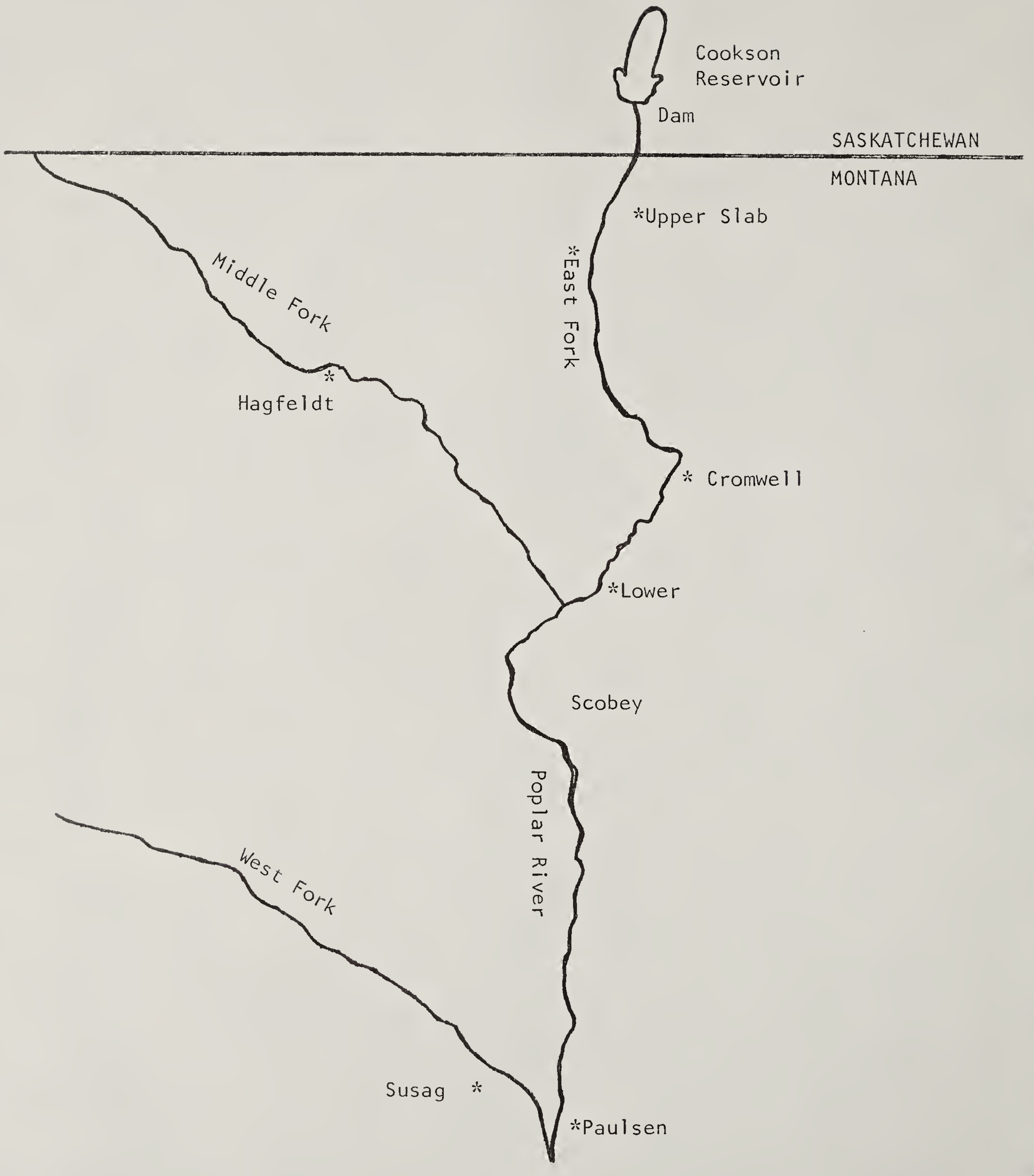

Figure 1. Approximate map of project area showing locations used for fish population sampling.

FINDINGS

Streamflow

April and May (northern pike and walleye spawning and egg incubation season) streamflows were considerably above average in all of the Poplar River drainage in 1982, because of above average winter snow accumulation and some rain in May. Water was released and spilled from Cookson Reservoir on the East Fork in April and May 1982 because of the high reservoir level. Mean recommended minimum instream and long-term mean April and May streamflows are shown in Table 1. April and May streamflows were well above values required to form strong year classes of walleye and northern pile.

Table 1. 1982 mean, recommended minimum instream and long-term mean April and May streamflows (cfs) in the Poplar River drainage.

	April			May		
	1982 Mean[a]	Minimum Instream[b]	Long-term Mean	1982 Mean[a]	Minimum Instream[b]	Long-term Mean
East Fork at US/Canada border	306	15	79	35	10	14
Middle Fork at US/Canada border	284	30	93	86	20	18

a - Data from USGS 1982 (in press)
b - Montana Department of Fish and Game 1979

Fish Populations in the East and Middle Forks Poplar River

Complete northern pike 1982 population estimates for the East and Middle Forks are contained in Table 2. Similar data are not shown for walleye because numbers present were insufficient for unbiased estimates. Abbreviated population numbers for both species are given in Table 3 for 1982 and previous years.

A strong 1982 year class of northern pike was formed in both East Fork sections and the Middle Fork section. The numbers in the Cromwell section were much larger than any previous year. The numbers of age 1+ and older northern pike were similar to previous years, but considerably less than in 1981. Significantly fewer age 3+ and older northern pike have been present in the East Fork Cromwell section in 1980-82 as compared to 1977-78.

Table 2. Northern pike population data for stream sections in the Poplar River, September and October 1982.

Age Class	Mean Length (inches)	Mean Weight (pounds)	Estimated Number	Est. Weight (pounds)	Fish Marked	Fish in Recapture Sample	Marked fish in Recapture Sample
East Fork Poplar River - Upper Slab Section - 6015 ft							
0+	8.5	0.14	771	110.1			
I+ & older	21.2	2.19	5	11.9			
Totals			776(±135)[a]	122.0(±21)	216	143	39
East Fork Poplar River - Cromwell Section - 7560 ft							
0+	5.3	0.03	7583	227.5			
I+	16.0	0.94	88	82.7			
II+	19.4	1.71	69	117.4			
III+ & older	29.5	6.97	8	58.0			
Totals			7748(±900)	485.6	1386	679	136
Middle Fork Poplar River - Hagfeldt Section - 8240 ft							
0+	11.0	0.32	209	67.6			
I+	15.9	1.01	67	67.4			
II+	18.9	1.70	7	12.6			
Totals			283(±73)	147.6(±12.6)	64	82	18

a - 80% confidence interval

Table 3. Number per mile of walleye and northern pike in Poplar River stream sections in fall 1977-1982.

Age Class	Walleye						Northern Pike					
	1977	1978	1979	1980	1981	1982	1977	1978	1979	1980	1981	1982
East Fork Poplar River - Upper Slab Section 6015 ft												
0+	11	0	0	0	0	2[a]	0	415	533	6	692	676
1+ & older	13	0	39	22	0	2[a]	1	1	24	459	78	4
East Fork Poplar River - Cromwell Section 7560 ft												
0+	3[a]	69	490	0[a]	5[a]	1[a]	0	0	211	0[a]	374	5301
1+ & older	161	170	60	1[a]	8[a]	7[a]	196	49	113	1[a]	229	115
Middle Fork Poplar River - Hagfeldt Section 8240 ft												
0	186	215	397	69	[b]	2[a]	6[a]	101	115	184	103	134
1+ & older	90	80	23	44	13	4[a]	18[a]	18[a]	66[a]	199	103	47

a - Statistical criteria not met; number is approximate
b - Numbers sampled insufficient for estimate of any kind

Only remnant populations of walleye remain in the East and Middle Forks of the Poplar River (Table 3). This situation has persisted since 1980 in the East Fork Cromwell section and since 1981 in the Middle Fork. The number of adults is apparently too low to produce significant YOY numbers. No good explanation can be offered for the drastic decline in walleye numbers.

Survey Electrofishing

Approximately one hour of survey electrofishing was done at five additional locations to determine the condition of walleye and northern pike populations. Electrofishing at two locations in the Middle Fork several miles upstream and several miles downstream of the Hagfeldt section (Figure 1) gave results similar to those found in the Hagfeldt section. No YOY walleye were found, few adult walleye and large numbers of YOY and adult northern pike were present.

At a point just downstream from the confluence of the East and Middle Forks no walleye were found, but large numbers of YOY and yearling northern pike were present. No older northern pike were sampled at this location.

Further downstream at the Paulsen location (Figure 1) a few adult and YOY walleye were found, but numbers were considerably less than in 1977-78. Large numbers of northern pike YOY and yearling were again present. Significant numbers of YOY smallmouth bass were also found at this location.

Survey electrofishing at the Susag location on the lower West Fork Poplar River produced small numbers of adult and YOY walleye, but again, significantly fewer than in 1977-78. Northern pike YOY and adult numbers were judged to be similar to 1977-78.

In conclusion, walleye in the Poplar River system have undergone a severe decline. The decline has been the most severe in the East and Middle Forks. Many poorly understood factors may be responsible.

LITERATURE CITED

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